

Amendments to the Claims:

This listing of claims will replace all prior versions, and listing of claims in the application.

1-94. (canceled)

95. (currently amended) A polynucleotide encoding a chimeric phosphorylation indicator having portions, where the chimeric phosphorylation indicator comprises, in operative linkage, a donor molecule, a phosphorylatable domain, a phosphoaminoacid binding domain, and an acceptor molecule, at least one of said donor molecule and said acceptor molecule comprising a non-oligomerizing fluorescent molecule that has a reduced tendency to oligomerize compared with a corresponding naturally occurring fluorescent molecule,

wherein said donor molecule comprises ECFP (amino acids 1-227 of SEQ ID NO:6) or a substantially similar variant thereof having at least 80% amino acid sequence identity with ECFP (amino acids 1-227 of SEQ ID NO:6), said phosphorylatable domain comprises EEEAEYMNMAPQS (SEQ ID NO:23), said phosphoaminoacid binding domain comprises a Src homology domain-2, and said acceptor molecule comprises citrine (YFP; SEQ ID NO:10 having Q69M) or a substantially similar variant thereof having at least 80% amino acid sequence identity with citrine (YFP; SEQ ID NO: 10 having Q69M), wherein the amino acid following the initiating methionine is assigned the '1 position in the numbering of said donor and acceptor amino acid sequences.

96-105. (canceled)

106. (previously presented) The polynucleotide of claim 95, wherein at least one of the donor and the acceptor comprises a fluorescent protein which comprises a mutation of an amino acid residue corresponding to positions 206, 221, 223, or a combination thereof of SEQ ID NO:6 or 10.

107. (canceled)

108. (previously presented) The polynucleotide of claim 106, wherein the mutation corresponds to an A206K mutation, an L221K mutation, an F223R mutation, or an L221K and F223R mutation of SEQ ID NO:6 or SEQ ID NO:10.

109. (currently amended) The polynucleotide of claim 95, wherein the donor molecule is ~~a fluorescent protein~~ and the acceptor molecule exhibit a detectable resonance energy transfer when the donor is excited, and the detectable resonance energy transfer is fluorescent resonance energy transfer.

110-114. (canceled)

115. (currently amended) The polynucleotide of claim ~~444~~ 147, wherein the ~~luminescent molecule~~ chimeric phosphorylation indicator further comprises a cell compartmentalization domain.

116. (previously presented) The polynucleotide of claim 115, wherein the cell compartmentalization domain is a membrane translocating domain.

117. (previously presented) The polynucleotide of claim 116, wherein the membrane translocating domain comprises an amino acid sequence CRQIKWFNRRMKWKK (SEQ ID NO:18).

118. (currently amended) The polynucleotide of claim 116, wherein the membrane translocating domain is operatively linked to the ~~luminescent molecule~~ fluorescent protein through an amino acid sequence CCXXCC (SEQ ID NO:17).

119. (currently amended) The polynucleotide of claim 95, wherein the donor and the acceptor molecule exhibit a detectable resonance energy transfer when the donor releases energy, ~~the donor molecule is a luminescent molecule,~~ and the detectable resonance energy transfer is ~~luminescent~~ fluorescence resonance energy transfer.

120. (canceled)

121. (currently amended) The polynucleotide of claim 95 ~~147~~, wherein the phosphorylatable ~~domain~~ polypeptide comprises a serine/threonine kinase phosphorylatable domain.

122-124. (canceled)

125. (currently amended) The polynucleotide of claim 95 ~~147~~, wherein the phosphorylatable ~~domain~~ polypeptide comprises a tyrosine kinase phosphorylatable domain.

126-127. (canceled)

128. (currently amended) The polynucleotide of claim 125 encoding a polypeptide, comprising, in an orientation from the amino terminus to carboxy terminus, an ECFP (1-227) (amino acids 1 to 227 of SEQ ID NO:6) molecule, an SH2 phosphoaminoacid binding domain from Shc, a GSHSGSGKP (SEQ ED NO:22) linker, a phosphorylatable domain comprising EEEAEYMNMAPQS (SEQ ID NO:23), and citrine.

129. (canceled)

130. (previously presented) The polynucleotide of claim 95, wherein at least one amino acid of the phosphorylatable domain is phosphorylated.

131. (previously presented) The polynucleotide of claim 130, wherein the amino acid is serine, threonine, tyrosine, or a combination thereof.

132-144. (canceled)

145. (previously presented) The polynucleotide of claim 95, which is operatively linked to an expression control sequence.

146. (currently amended) The polynucleotide of claim 145, wherein the expression control sequence is a transcription regulatory element, a translation regulatory element, or a combination thereof.

147. (currently amended) ~~The~~ A polynucleotide of claim 132, encoding a chimeric phosphorylation indicator having portions comprising a phosphorylatable polypeptide and a fluorescent protein which polynucleotide is operatively linked to an expression control sequence, wherein said fluorescent protein comprises a non-oligomerizing fluorescent protein having a reduced tendency to oligomerize compared with a corresponding naturally occurring fluorescent protein.

148. (previously presented) The polynucleotide of claim 147, wherein the expression control sequence is a transcription regulatory element, a translation regulatory element, or a combination thereof

149. (previously presented) A kit comprising at least one polynucleotide of claim 95.

150. (currently amended) The kit of claim 149, comprising a plurality of polynucleotides encoding a plurality of different chimeric phosphorylation indicators comprising at least two chimeric phosphorylation indicators differing from each other in at least one portion selected from the portions consisting of donor molecule, phosphorylatable domain, phosphoaminoacid binding domain, and acceptor molecule.

151. (previously presented) The kit of claim 150, wherein the chimeric phosphorylation indicators encoded by the polynucleotides comprise different phosphorylatable domains.

152. (currently amended) The kit of claim 150, wherein the chimeric phosphorylation indicators encoded by the polynucleotides comprise different donor molecules or acceptor molecules or both.

153. (currently amended) A kit comprising at least one polynucleotide of claim ~~132~~ 147.

154. (currently amended) The kit of claim 153, comprising a plurality of polynucleotides encoding a plurality of different chimeric phosphorylation indicators comprising at least two chimeric phosphorylation indicators differing from each other in at least one portion selected from the portions consisting of phosphorylatable polypeptide and non-oligomerizing fluorescent protein.

155. (previously presented) The kit of claim 154, wherein the chimeric phosphorylation indicators encoded by the polynucleotides comprise different phosphorylatable polypeptides.

156. (currently amended) The kit of claim 154, wherein the chimeric phosphorylation indicators encoded by the polynucleotides comprise different non-oligomerizing fluorescent proteins.

157. (currently amended) A kit comprising at least one polynucleotide of claim ~~138~~ 147, which polynucleotide is operatively linked to an expression control sequence, wherein the chimeric phosphorylation indicator further comprises a phosphoamino acid binding domain operatively linked to the phosphorylatable polypeptide, wherein the non-oligomerizing fluorescent protein comprises an N-terminal portion and a C-terminal portion, and wherein the phosphorylatable polypeptide and operatively linked phosphoaminoacid binding domain is operatively inserted between the N-terminal portion and C-terminal portion of the non-oligomerizing fluorescent protein.

158. (currently amended) The kit of claim 157, comprising a plurality of ~~different~~ chimeric phosphorylation indicators comprising at least two chimeric phosphorylation indicators differing from each other in at least one portion selected from the portions consisting of phosphorylatable polypeptide and non-oligomerizing fluorescent protein.

159. (previously presented) The kit of claim 158, wherein the chimeric phosphorylation indicators comprise different phosphorylatable polypeptides.

160. (currently amended) The kit of claim 157, wherein the plurality of different chimeric phosphorylation indicators comprise different non-oligomerizing fluorescent proteins.

161. (previously presented) A vector comprising the polynucleotide of claim 95.

162. (currently amended) The vector of claim 161 which is an expression vector.